Tertiary Level Environmental Education: The University of Notre Dame Australia Experience

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Abstract

The reality of environmental education in Australian universities has not always lived up to the expectations of the theoretical literature. Ideally environmental education should develop environmentally responsible citizens who have: (i) an awareness and sensitivity to the environment; (ii) a sound knowledge about environmental issues, problems and solutions; (iii) feelings of concern for the environment; (iv) skills for solving environmental problems; (v) the ability to critically evaluate environmental issues; and (vi) the motivation to take action to implement environmental solutions. This requires education *about*, *in* and *for* the environment. Through changing people's behaviour, environmental education also has an important role in achieving sustainability. Despite a recent explosion in tertiary level environmental education in Australia, there is little evidence that the ideals of environmental education are being upheld in many universities. This paper presents the experience of the University of Notre Dame Australia with environmental education within the Bachelor of Arts (Environmental Studies) degree. Here a multi-disciplinary approach has been adopted which fosters student empowerment and active participation in the resolution of environmental problems. Education *about* the environment incorporates a broad range of specific subject areas and contemporary environmental issues. Experiential learning *in* the environment is promoted through field trips, interaction with practicing environmental professionals and work-force internship programmes. Education *for* the environment is undertaken through innovative 'real-life' assignments. The concept of education for sustainability underlies the entire environmental studies programme and is explicitly promoted through values education and the reinforcement of appropriate behaviour. A major future challenge concerns balancing the increasing demands for more specialised and vocationally based education coming from employers and students alike with the holistic and socially critical aspects of ideal environmental education.

Introduction

There is a well established body of theoretical literature addressing the objectives and principles of environmental education as well as a growing number of reports on the application of these principles in practice. The latter addresses the practice of environmental education at all levels within the formal education system as well as industry based training and community education programmes. The recent explosion in environment related degree courses at Australian universities (Cosgrove and Thomas 1996) has been accompanied by increasing research into the utility of tertiary level environmental education. This paper explores some of the challenges faced by tertiary environmental educators and examines environmental education developments at the University of Notre Dame Australia.

Before addressing environmental education in universities, it is useful to reiterate some of the basic principles of environmental education. Six objectives of environmental education have been

well established which relate to the desirable outcomes for learners. These are (UNESCO-UNEP 1975):

- **awareness** of and sensitivity to the environment;
- **knowledge** and basic understanding of the total environment including its problems and their solutions;
- **attitudes** - acquiring social values and feelings of concern for the environment and the motivation to participate in its protection and management;
- **skills** for solving environmental problems;
- **evaluation ability** - acquiring the ability to critically evaluate environmental measures and education programmes; and
- **participation** - developing a sense of responsibility and urgency regarding environmental problems and taking action to solve these.

Fien (1988) identifies three approaches to environmental education that can achieve these objectives; education *about*, *in* and *for* the environment. Education *about* the environment promotes understanding of natural systems and human impacts on them and hence meets the awareness and knowledge objectives. Education *in* the environment can be used to give reality, relevance and practical experience to learning, and in addition to awareness and knowledge objectives is usually considered necessary for attitudinal change and the opportunity for the development of practical skills. Education *for* the environment aims to promote an informed sense of responsibility for the environment and ability to adopt lifestyles compatible with the wise use of environmental resources. It builds on education about and in the environment and meets all six objectives of environmental education. More recently some authors have advocated that education *with* the environment may be more appropriate approach than education *for* the environment as the latter implies a prescriptive approach whereby educators could be seen to be trying to persuade others to a particular point of view (eg. Greenall Gough 1990, Jickling 1992, Dyer 1997).

In keeping with the notions of education *for* the environment, Hungerford and Volk (1990) state that the ultimate goal of environmental education is to change human behaviour in order to develop citizens who will behave in environmentally desirable ways. The traditional approach to education has been based on the belief that behaviour can be modified by simply teaching learners about something. Hungerford and Volk (1990) argue that in order to change behaviour, instruction must go beyond an 'awareness' or 'knowledge' of issues alone to provide students with the opportunity to develop a sense of 'ownership' and 'empowerment' necessary to promote responsible action. Appropriate educational techniques to achieve this in learners includes affective domain learning (eg. Iozzi 1989) and values education (eg. Department of Education, Queensland 1992, p11) whereby learners address environmental issues on an emotional as well as a cognitive level. By developing strong personal values towards the environment, behavioural change is more likely to follow. This is what is intended by education for or with the environment.

Further to environmental education for learner behavioural change, attention has recently been focussed on the role of environmental education in achieving sustainability. Several authors (eg. Huckle 1991, Greenall Gough 1992, Fien & Trainer 1993) have argued that this demands a socially critical pedagogy which seeks to empower students so that they can start to transform society into a sustainable one (i.e. a shift from influencing individual learners to ultimately influencing communities at large). In this context, environmental education becomes highly political in nature in both its intent (i.e. a desire to be critical of and transform society) and in its treatment by governments at all levels (Greenall Gough 1992). It requires an empowering approach to education and promotes the acquisition of 'dangerous knowledge' (Maher 1986 in Fien 1993, p8) which is counter-hegemonic to existing education and decision-making arrangements in society. Education for sustainability also requires a holistic approach. Fien (1997) states that it requires comprehensive consideration of social environments including issues such as human rights, equity, economics and democracy, in addition to studies of the geophysical and biophysical environment normally associated with environmental education programmes.

Environmental Education in Australian Universities

In 1997, there were 38 universities in Australia (Ashenden & Milligan 1996, p128) of which 34 offered at least one environmental course leading to a qualification and across these universities a total of 135 individual environmental courses were on offer (p69-71). These figures do not include other tertiary education providers such as TAFE colleges. Cosgrove & Thomas (1996) note that the number of environmental courses at Australian universities has increased dramatically in recent years and continues to rise. Despite its prevalence, the efficacy of environmental education in Australian universities would appear to be generally poor judging from the results of recent research. For example, in a survey of 4,000 university students, Blaikie (1993) found that they were, on average, no more committed to positive environmental attitudes and did not exhibit a higher level of environmental responsible behaviour compared to people generally.

Cosgrove and Thomas (1996) reported on a survey in late 1993 of all the tertiary courses with 'environment' in their title which could be identified at that time within Australia. Their examination included aspects such as course type, teaching approaches adopted and the underpinning philosophy. They suggested that the upsurge in tertiary environment courses was the result of an attempt to 'cash in' on increasing interest in environmental matters by secondary school students and a corresponding decreasing interest in traditional science courses. Despite including the term 'environment' in their title or for their promotion, the researchers found many courses did not exhibit the interdisciplinary approaches nor the social analyses that might logically be expected. This lead them to state the following (Cosgrove & Thomas 1996):

> If we take Fensham's (1987) description of environmental education as being education *about* the environment, *in* the environment and *for* the environment, that is seeking ways to bring about improvements, then some of the courses in this survey should probably not be regarded as offering environmental education.

Dyer (1997) reported on the nature of environmental education in Australian universities. He suggests that there is a reasonably large and rapidly increasing number of university teachers who teach and research basically *about* the environment and states that:

> Environmental education, which is socially critical, non-disciplinary, non-liberal in temper and avowedly *for* the environment, is a recent development in universities.

Dyer (1997) refers to this form of education as Green Education which offers a new social purpose of universities as being agencies of environmental concern. Green Education offers a holistic, interdisciplinary approach to understanding and solving the problems of environmental degradation which humans are bringing about. It requires a new approach to both pedagogy and to the structures of universities themselves (Dyer 1997) so that the institutions themselves become living models of sustainability.

It is in the context of education for sustainability or Green Education that the experience of environmental education at the University of Notre Dame Australia is explored.

The University of Notre Dame Australia Experience

Undergraduate environmental education commenced at the University of Notre Dame Australia in 1994 in the form of a Bachelor of Arts (Environmental Studies). The philosophy behind this degree programme and its development was to provide a focus on the more general area of 'environmental studies' rather than environmental science or a discipline specific approach such as environmental engineering. This was in a deliberate attempt at an inter- and trans-disciplinary approach which is consistent with that recently advocated by Dyer (1997). Students are able to select units towards their degree from a wide range of disciplines such as:

- biology (eg. biological and ecological studies);
- environmental science;
- physical sciences (eg. geological and chemical processes, mining);
- environmental management (eg. conservation and management of natural resources);

- physical geography;
- human geography;
- philosophy and ethics (eg. environmental ethics);
- politics (eg. environmental policy and decision-making);
- psychology (eg. community and environmental psychology); and
- business (eg. nature based tourism).

The diversity of the programme provides for a socially critical approach as students are not confined to a single discipline and hence are encouraged to explore environmental issues from a variety of perspectives.

The remaining discussion provides some examples of the University of Notre Dame Australia approach to environmental education in relation to the key issues identified previously.

Education about the environment

Environmental studies students at Notre Dame learn a tremendous amount *about* the environment, which is generally acknowledged as being the easiest form of environmental education to deliver (eg. Greenall Gough 1990). The specific subject areas covered in the individual units that comprise the Bachelor of Arts (Environmental Studies) are too numerous to list here. However it is important to note that they:

- embrace nearly all aspects of the physical, biological and social environment;
- include an extensive variety of environmental problems and solutions to these;
- provide both historical and contemporary perspectives on environmental issues;
- include global, national, state-wide and local perspectives; and
- are addressed in a multi-disciplinary fashion including practical, ecological, cultural, political, economic, legal, ethical and spiritual dimensions.

Education in the environment

Experiential learning, or learning *in* the environment is encouraged wherever possible, and is achieved in a number of ways. One important approach is by undertaking field trips. Most units have at least one field trip and these range from local visits of 1-2 hours duration (eg. to the 'World of Energy' education centre in Parry St, Fremantle operated by Western Power Corporation) through to major field trips up to a week in duration (eg. to the karri forests near Pemberton in the south west of Western Australia). The location of the Notre Dame campus in the heart of the City of Fremantle encourages tremendous interaction with the local community and its many cultural and environmental attractions. Experiential learning in a vocational sense is also promoted by employing practising professionals to teach some of the units. Staff from the Department of Conservation and Land Management (CALM) teach two of the units and a third is taught by the Australian Association of Environmental Education (based around the Catchments, Corridors & Coasts professional development programme for teachers). Students are also required to undertake a 6-8 week Internship during which they are placed with an organisation of their own choice to undertake work experience. This maximises their vocational training and employment prospects at the end of their degree as well as providing another form of education *in* the environment. The combination of field trips, exposure to practising professionals and internships ensures that the employability of our students is maximised, which is consistent with the position advocated by Cosgrove and Thomas (1996) for tertiary environmental educators.

Education for the environment

Education *for* the environment is facilitated in several ways at the University of Notre Dame Australia.

Firstly assignments are selected for students which attempt to apply knowledge to a real-life problem or situation wherever possible. For example during the 'Environmental Science: Australian Issues' course a case study on land and water degradation is undertaken including a major field trip in the Peel-Harvey catchment; an estuarine system that is eutrophic as a result of unsustainable land uses in the past. Prior to the field trip the students learn all about the environmental impacts associated with various land uses in the catchment. During the field trip, emphasis is placed on practical solutions to these problems and the students see first hand some

of the innovative land management practices that have occurred in recent years. By meeting the people involved, the students understand the social, economic and political issues affecting these environmental issues. The students' major assignment in this unit (undertaken after the field trip) is to prepare a catchment management plan for one of the rivers flowing into the Peel Inlet. This requires them to engage in critical evaluation of the various issues and apply their knowledge towards producing a sustainable model and vision for future land management; an important step in education for the environment. Many other units utilise a similar approach to the students learning with respect to the types of assignments and tasks that the students engage in.

In some circumstances it is possible to devise assessable tasks for the students to undertake which have direct 'real-life' application; as the 'Environmental Interpretation and Management' unit taught by CALM staff demonstrates. This unit evolved from a professional training course conducted by CALM for its internal staff (eg. national park rangers) involved in running educational and recreational activities for the public. This four day training course still exists as one component within the university unit and is now made available to the wider public as well as CALM staff. The students therefore have the opportunity to not only be taught by professionals but also to interact with other professionals during this unit. The major assignment is for the students to develop their own interpretive activity within the Fremantle area focussing on some aspect of the local cultural or natural environment. These activities are timetabled into a week long programme entitled 'Footloose in Freo', which are then led by the students and are made available to the public. Hence, whilst being assessed on their activity design and tour guiding skills, the students are actively educating the public participants and enriching their experience of Fremantle. This unit is popular with the students and has been very successful at integrating the university with the local community.

A final example of education for the environment relates to the development of values and action for the environment by the students. This particular example stemmed from an environmental education activity devised and implemented by two students in the Foundations of Environmental Education unit although similar activities have been undertaken in other units. Having learnt the theory of environmental education in the class room and experienced an existing environmental education programme first hand during a field trip which they had to critique, the students were challenged with the task of designing an 'ideal' environmental education activity and conducting it with their fellow students. Two of the students based their activity around the proposed Fremantle Eastern Bypass road. The class visited the site of the proposed road so they could see what parts of the environment would be affected and two guest speakers addressed the class; one in favour of, and one opposed to the bypass. Upon returning to the university, each student was required to write a letter to either the local newspaper or the Minister for Transport regarding the bypass. Several student letters were subsequently published in the Fremantle Herald (December 6 & 13 editions, 1997) while others received replies from the Minister for Transport. This simple activity of only 2-3 hours duration fulfilled many if not all the objectives of environmental education outlined previously and resulted in the students taking action for the environment.

Education for sustainability

The concept of sustainability underpins the Environmental Studies programme at the University of Notre Dame Australia. Whilst there is no specific unit focussed on this concept, it is addressed in most if not all other units. Hence students are required to grapple with the concept of sustainability in the context of a variety of study areas. For example when considering the issue of urbanisation in the 'Global Principles of Environmental Science' course, the students are asked to provide their own vision of what a sustainable city looks like. This task requires the students to apply their knowledge on the subject and to address their personal values. The students' personal visions are then juxtaposed with the city in which they live and the opportunities to make the two compatible are explored by the whole class. Ellyard (1994) states that we cannot work to create a future that we first do not imagine. Given that there is no single accepted definition of sustainability or description of what a sustainable society looks like, having the students project their own vision of a sustainable future is an important entry point to this concept.

Education for sustainability is also promoted through values education and promotion of appropriate behaviour. The students are encouraged to explore their own values towards the environment in the 'Environmental Ethics, Policy and Planning' unit, where they each prepare a statements of their own statement of environmental ethics based upon their own family's history and place in society going back several generations. Differences in values between students are openly supported to avoid any sense of intolerance. Development and changes to personal values are also encouraged and monitored. For example, in the 'Natural Resources' unit a major case study on the contentious issues of forest management is conducted which involves several guest lecturers and a major field trip to the karri forests of Western Australia during which competing uses of the forest are explored (eg. timber harvesting, conservation, tourism, recreation etc.). An in-class survey of the students values and opinions towards forest management before and after this case study revealed dramatic changes in just a few weeks (eg. regarding the acceptability of current logging practices in native forests).

The adoption of appropriate behaviour towards the environment by students is strongly encouraged through both prescriptive and open means. A prescriptive approach is utilised during activities in the environment when certain behaviours necessary for environmental management are enforced (eg. hygiene procedures to prevent the spread of dieback disease). An open approach is utilised in activities when the students are encouraged to act for the environment but not directed in how to do so (eg. the letter writing exercise outlined previously). The students are also strongly encouraged to join professional environmental bodies and action groups that reflect their own interests in and concern for the environment. In this way appropriate behaviours for sustainability are reinforced which Hungerford and Volk (1990) identify as being an important step towards empowering students to take action.

Future Challenges

There are a number of challenges for environmental education at the University of Notre Dame Australia in the near future. Despite the adoption of a holistic, critical and empowering approach to environmental education, there has been a tendency to over-emphasise education *about* the environment with most classes taking place inside a standard classroom and being highly knowledge based. One of the ongoing challenges is to find creative and stimulating ways to further increase the educative content based *in* and *for* the environment.

Students are studying at university with the ultimate goal of obtaining meaningful employment in their chosen discipline. Consequently they are expecting to obtain knowledge and skills that will make them highly employable. At the same time, environment related industries are increasingly seeing specialised vocational training as being important for employment (Peter J. Jones and Associates Pty. Ltd. 1997). Hence there is increasing demand for more narrowly focused education based on discrete professions or disciplines. The challenge here is to provide adequate specialisation including technical and vocationally based training whilst maintaining a multi-disciplinary, holistic and socially critical approach to environmental education.

Conclusion

The theoretical literature on environmental education poses some major challenges to tertiary environmental educators. These revolve around:

- meeting the six well established objectives of environmental education;
- educating *about*, *in* and *for* the environment;
- educating for appropriate environment related behavioural change; and
- an empowering and holistic approach aimed at achieving sustainability.

Despite a recent upsurge in tertiary level environmental education, follow-up studies suggest that few Australian universities live up to these expectations. There has been little evidence of positive environmental attitudes and corresponding responsible behaviours in university students compared to people generally and many university courses, despite having the word 'environment' in their title, do not live up to the theoretical expectations of environmental education with an emphasis on education *about* the environment only.

A multi-disciplinary approach to environmental education has been adopted at the University of Notre Dame Australia which emphasises experiential learning through field trips, instruction by practising environmental professionals and student internships. Education *for* the environment is promoted through student assignments based on real-life problems and solutions wherever possible. Education for sustainability underlies the entire Environmental Studies programme and is promoted through values education, student empowerment and by encouraging the students to adopt appropriate behaviours towards the environment. Education *about* the environment continues to comprise a major part of teaching at the University of Notre Dame Australia and an ongoing future challenge is to further develop teaching *in* and *for* the environment. A second challenge is to balance the demands for specialised and vocationally based education with the holistic and socially critical aspects of ideal environmental education.

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